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AUTHOR   Calderhead, James
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ABSTRACT
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DEVELOPING A FRAMEWORK FOR THE ELICITATION AND ANALYSIS OF
TEACHERS' VERBAL REPORTS

James Calderhead
Lecturer in Educational Research
University of Lancaster

Abstract

Research on teaching has recently focussed on the cognitive
aspects of teachers' work, using a variety of verbal report
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research frequently underestimate the complexity of teachers'
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Research on teachers' thought processes has grown rapidly over the
past decade, as it has become increasingly recognised that much of
teachers' professional activity is cognitive in nature, and that a
large proportion of teachers' classroom behaviour is the product
or accompaniment of some form of thinking. Within a framework of
organisational and curricular constraints, teachers make decisions
about what to teach and how; they plan work; and they identify and
find solutions or compromises to a regular flow of classroom
problems. Any adequate account of teaching processes must clearly
encompass such cognitive acts. Attempts, therefore, to understand
such fundamental educational processes as how teachers learn to
teach, how they figure within the process of translating
curricular ideas into practice, how teachers might account for
their professional behaviour, or how the processes of classroom
teaching and learning inter-relate, have all recently directed
some attention towards the nature and functioning of teachers'
thought and knowledge (see Clark and Peterson, 1986; Calderhead,
1984).

One of the features of research on teachers' cognitions is that
not only is concern with the area stimulated by a variety of
different educational issues and questions, but the research is
also guided by many different theoretical and methodological
perspectives, involving alternative presumptions about the nature
of social scientific activity and different ideas on the
relationship of theory and research to practice (see Eggleston,
1979, Halkes and Olson, 1984 and Calderhead, 1986). One of the
features common to much of this research, however, is the attempt
to gain access empirically to teachers' cognitive processes

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through the use of some form of verbal report procedure. The focus of this paper is on the use of such procedures and the interpretation of the data they yield.

The terms 'teacher thinking' and 'teacher cognitions' are often used fairly loosely to refer to a range of activities (e.g. perception, conception, development of knowledge structures, knowledge-in-action, and the manipulation of ideas) united simply by the fact that they are covert mental processes presumed to influence and guide professional action. In attempting to gain access to these activities, procedures such as 'think aloud', stimulated recall, or structured or unstructured interviews have been employed. However, both the ways in which these procedures are used and the ways in which the resulting data are interpreted depend upon a model of the nature of teachers' cognitions. The model is not always explicitly stated, but a model, even if only in the form of a set of commonsense asssumptions, determines what are the significant features of those verbal reports and how they are best collected and interpreted.

Some of the models that have guided research on teachers' cognitions have been adopted from fields of psychology and sociology, and to a lesser extent, anthropology and linguistics. Sometimes the models are used heuristically. They provide methods and a conceptual framework which allow a way in to further exploration of teachers' cognition, and in consequence permit some manipulation or elaboration of the model itself. On other occasions, models are used deterministically, the data is interpreted purely in terms of the model, no interaction occurs

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between the model and data, and the research reifies the original theoretical framework.

In the use of verbal report procedures to investigate teachers' cognitions, there are some common, general assumptions. For example, it is assumed that teachers do have some degree of access to their professional thinking and that this can usually be reported in words. Each model also makes its own particular assumptions about the nature of teachers' knowledge or cognitive processes. Personal Construct Theory, for instance, originating in clinical psychology (Kelly, 1955) presupposes that we construe our environment with the aid of bi-polar constructs. A range of associated methods aim to elicit these constructs (e.g. triadic elicitation) and a bi-polar structure is placed on the verbal reports that result. Theory from cognitive psychology (e.g. Anderson, 1985; Norman, 1982) views knowledge bases or schemas as organised networks of concepts and relations and has led to the use of verbal reporting procedures to chart teachers' knowledge in this way.

Some models offer a more open, less detailed conceptualisation of knowledge structures and cognitive processes. The symbolic interactionist notion of perspective, for instance, which attempts to represent the ways in which thought and action integrate, has been defined as:-

"a co-ordinated set of ideas and actions a person uses in dealing with some problematic situation, to refer to a person's ordinary way of thinking and feeling about and acting in such a situation.

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These thoughts and actions are co-ordinated in the sense that the actions flow from the actor's point of view, from the ideas contained in the perspective" (Becker et al, 1961, as quoted in Tabachnick and Zeichner, 1984).

This allows considerable exploration on the part of the researcher to evaluate the observations and commentaries of teachers to determine what is or is not relevant data. A possible advantage is that it allows the researcher to make the 'best sense' of the data, although at the same time it often obscures from scrutiny the assumptions about teacher cognitions which are inevitably implicit in this selection process.

Schon (1983) proposing the notion of knowledge-in-action, suggests that much professional knowledge is tacit, and implicit within action. Schon's own approach to identifying this knowledge is to infer it from professional conversations, usually between expert and novice, which focus on a particular problem area. Those researchers who have employed Schon's notion in research on teachers' thinking, however, have relied heavily on teachers' verbal reports (usually stimulated recall protocols) from which the researcher may infer a set of concepts and procedures to explain the teacher's means of solving a particular problem.

Most approaches to investigating teachers' cognitions presume that teachers' verbal reports correspond directly to teachers' knowledge or thought processes. However, there are a number of factors that might obviously affect the reliability and status of those reports. Where there is a time lag between the thinking and

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reporting of the thought, it is possible that the reported thought
is an abstraction or reinterpretation of real thinking. Some
thinking may not be recalled or be verbalisable. In some cases,
teachers may not wish to expose or confront their thinking (see
Calderhead, 1981).

These models make several assumptions about teachers' thought and
knowledge. However, when matched against the data we have on
teachers' cognitions, they seem to have several shortcomings.
Teachers' perceptions, for instance, are often difficult to reduce
to bi-polar constructs, even given repertory grid methodology (see
Yorke, 1986; Calderhead, 1983). Procedural and subject matter
knowledge often appear to intermesh in the activities of teachers
in ways that are difficult to conceptualise with the models of
cognitive psychology alone (c.f. Elbaz, 1983). In fact, each
model appears to provide us with one, rather contrived and
possibly distorted view of teachers' cognitions. For some
questions and purposes, these distortions may be tolerable.
However, if we are to build more representative and explanatory
models, we have to examine their shortcomings and consider what
the data tells us about teaching that the models fail to
conceptualise. Where do the models fall down? What can we say
about teachers' cognitions as a result of a fuller exploration of
the data we have?

Several regularly occurring features of teachers' cognitions can
be identified which don't readily fit the commonly-used models.
The following examples are taken from my own research on the
professional learning of student teachers, using think aloud

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procedures, stimulated recall and interview, although similar examples can also be found in other work.

First of all, in a stimulated recall situation, teachers are generally asked to recall what was going through their mind at the time. However, quite a high proportion of their comments don't appear to fall into this category. In going over stimulated recall commentaries with teachers afterwards, asking them whether their commentaries related to actual thinking, it seems that much of the commentary is apparently 'irrelevant'. This includes descriptions of what's happening in the classroom, explanations of events, prescriptions, rules, commitments, putting events in context or providing elaborations of their thinking which make it comprehensible to the researcher, evaluations of their own or pupils' performance or new realisations or re-interpretations of events in the light of new evidence supplied by the videotape itself. Teachers appear to develop their own style of reporting in this context, some focussing quite heavily on evaluative comments, for instance, others tending towards describing ongoing events, like a football commentary. Student teachers, whose attention during the lesson is often completely absorbed in their own activity, notice much more on video than they do in real life, and may offer interpretations of the classroom behaviour which bear little resemblance to what they were thinking about at the time. The ways in which teachers conceptualise - or, more accurately, misconceptualise - the task, for example as one of rendering their teaching sensible to the researcher, or of evaluating their own teaching, probably explains how many of these comments arise.

However, if some teachers were to report only those thoughts they could recall having at the time, their commentaries would appear as a staccato of unconnected ideas, thoughts and perceptions which might be very difficult to comprehend. The additional comments that teachers provide, particularly if we can identify them, for instance, as the ways in which teachers render their behaviour sensible, may in themselves be useful data for understanding teaching. It may also be the case that what appears to be an 'irrelevant' or 'additional' explanation is an attempt to put non-verbal thinking into words. For example, in a stimulated recall of a lesson in which the teacher had a near confrontation with a pupil, she explained in some detail how on a previous occasion the child had thrown a tantrum, refused to do what he was told, and became quite hostile. When asked about this later, she explained that although the words of her commentary didn't pass through her mind at the time, the memory of the incident did, including a brief recollection of how it escalated, of how she felt about it and how she responded. This occurred partly in the form of images, pictures and feelings. What seemed like irrelevant description was in fact the nearest way of expressing the experience that she had.

It is conceivable that teachers could be trained to provide commentaries more closely resembling those which researchers often seek. However, the kinds of commentaries they tend normally to give may in themselves provide clues about the nature of teaching.

Another feature of teachers' verbal reports of their thinking

which isn't well conceptualised in some current theory and methodology is their occasional complexity. When teachers report their thoughts, sometimes these are the cues they were attending to (e.g."I noticed he was looking around rather than getting on with his work."), interpretations of those cues (e.g. "He didn't listen to instructions"), ideas triggered at that moment ("Another way of exploring this might be..."), or goals which might be immediate and proximal ("I want to get them all involved in this") or more distant to the actual event ("This unit has to be covered by the end of term"). Sometimes teachers' reported thoughts are combinations of these. On other occasions, in order to understand the classroom activity, we need more than the partial, selective commentary that the teacher provides, and we may need to explore or further probe the teacher's reports of their thinking.

For instance, student teachers' lessons have been found frequently to follow the format of an initial class discussion or activity, the setting of a task and the giving of instructions, followed by the class working individually or in groups as the student teacher circulates the classroom. When providing a stimulated recall commentary, the period of circulating is usually accompanied by relatively few comments from the students. These often consist of general remarks, like "I wanted to move around to see how they were getting on" or "I was just circulating here" and sometimes include descriptions of what particular children were doing and occasionally what the students have noticed about the pupils' work. When urged to talk more about what was actually going through their minds at the time, some report feelings of anxiety which seem regularly to occur with them at this stage of the

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lesson. They've set the work, explained what to do and they feel they have handed things over to the children. Whether the lesson goes well or not is something that has now largely passed out of their control. They also frequently comment that they feel awkward circulating, they feel as though they are getting in the children's way, intruding in their work and preventing them from getting on. When then asked why they circulate, they invariably reply that it is what's expected of them. It is what their supervising teacher does, and what their tutor (who assesses their classroom performance) expects. This is an interesting contrast to the kinds of commentaries some experienced teachers have provided, in which they mention moving to particular pupils who they anticipate will have difficulty, helping groups get themselves organised, monitoring the work of particular children or groups, and moving to a particular part of the room as a managerial strategy for making their presence felt when excessive noise or disruption seems threatened. In fact, in some cases circ.ating serves several managerial and instructional functions rolled into one, and can be quite a skilful, well-integrated series of strategies. Many student teachers, however, seem to be emulating the behaviour but integrating it simply with the motive of being favourably assessed on their teaching practice. (Incidentally, for them, it works - many of the students in this study received tutors' reports which praised their circulating strategies!) For these student teachers, circulating is not a complex teaching strategy, but simply a time when they hand the task over to the children and look busy. We might expect to find a similar pattern in the case of some other teaching behaviours, since it's conceivable that student teachers may well be

identifying and imitating teaching behaviours without picking up the cognitive aspects of what teachers do. However, teachers' cognitions, and particularly their inter-relationships, are not easily identified. The same teaching behaviour may represent a complex or simple strategy, and in a stimulated recall commentary, probing and exploration may be necessary to identify which.

Another aspect of the complexity of teachers' thinking is the way in which teachers sometimes appear to process quite large amounts of information. For example, in identifying the mood of the class, the disruptiveness of a particular child, instances of attention-seeking, time-wasting or tiredness, teachers seem alert to many different patterns of cues. When teaching, they may also be juggling various conflicting interests (e.g. keeping everyone involved, pacing the lesson so as not to lose the less able, asking the occasional demanding question to get the children to think for themselves). And their classroom actions frequently serve several functions at once (e.g. asking a question might cue the class into an important procedure or piece of information, and might also be commanding attention through the tone of voice in which it is asked). One teacher explained in a stimulated recall commentary how, in the introduction to a maths lesson, her thoughts were carefully following the explanation she had planned in advance, but at the same time she was projecting herself into the position of the children, sitting listening to her, thinking to herself 'Now what do I make of that?' The interaction between her planned explanation and her ongoing projection into the children's point of view guided her introduction to the lesson. Frequently, however, teachers do not provide commentaries that

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describe these complex aspects of teaching. This could be due to
several factors: such aspects of teaching are difficult to
describe, teachers may feel pressured for time in a stimulated
recall context, they may only occasionally be aware of such
complexities, having given one 'thought' or 'reason' for their
behaviour perhaps they think that this is an adequate account, or
perhaps they are simply not acquainted with a language for
describing their practice. Alternatively, perhaps these
complexities of teaching are in fact rare events. However, the
latter account seems unlikely since when these 'complex'
descriptions are made known to other teachers, they readily
recognise them as familiar. Perhaps like the good novelist who
can capture and aptly describe a particular moment, which many can
then recognise and relate to their own experience, some teachers
describe moments of teaching, that involve complex, multi-
dimensional thinking, which others have also experienced but have
difficulty describing. The implications for research are that our
explorations of teachers' cognitions may have to take account both
of the need to probe teachers' verbal reports and of the varying
degrees of facility with which teachers can reflect genuinely upon
their thinking.

A final feature of teachers' thinking which is suggested by verbal
reports but which is generally not well catered for in our
research models or methods concerns the role of affect. In
talking about their teaching, teachers fairly frequently say
things like "It really riles me when he talks to me in that tone
of voice." or "I can feel my hackles rise when they start to
behave like that." or "I really start to feel angry and resentful

when they just don't seem to appreciate the effort I put into this." Teachers are aware of having affective responses in their work, and are aware that the affective experience influences their teaching behaviour or in some cases inhibits their ability to cope with a classroom problem. A common example with student teachers is the affect that surrounds the adoption of a role of authority. Perhaps accentuated after spending three years in a comparatively liberal, university environment, student teachers frequently experience anxiety over becoming an authority figure. They commonly perceive class teachers as unnecessarily authoritarian. In situations where they have strongly to direct the children, or where a conflict between teacher and child emerges, or where the situation pressures the student to exert their authority, they may know the response that 'works', but often can't carry it out or carry it out half-heartedly and unconvincingly, or with great anguish and regret, or attempt desperately to find an alternative. Either way it is accompanied by feelings of anxiety which contribute to shaping the student teacher's developing practice. Both students and experienced teachers experience affect in their profesional lives which influences their classroom practice. However, the models that have been used to examine teachers' cognitions have generally left this aspect of cognition out of account. Indeed, some have claimed that it is a feature frequently omitted from the study of human cognition in general (e.g. Wagner, 1987).

In conclusion, whatever approach we take in our research on teachers' cognitions, we make certain assumptions about the nature of cognition and how it is most appropriately investigated.

Different researchers adopt different models to guide their research, each providing an alternative lens through which to view the cognitive activity of teachers and its relationship to classroom action. Usually these models have been derived from other disciplines, originally for other purposes, and they inevitably provide a partial and somewhat distorted view of the nature of teaching. If we are to build more representative, more explanatory models of teaching, we need to discover the implicit and explicit assumptions about teachers' cognitions which inform our research, so that our models and methods can be clearly identified. In addition, we need a close examination of the data we have about teachers' cognitions. The verbal reports of teachers, explored collaboratively with teachers, who are after all the only witnesses to their own thinking, can contribute to the case material from which we can identify the characteristics of teacher cognition, evidenced in real-life teaching. Comparisons of different models and the views they give us of teaching processes, together with the exploration of data we have about teachers' thought processes, in the light of the questions that interest us, may help us identify those features which can be fruitfully incorporated into future models, furthering our understanding of teachers' classroom practice.

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